MG031MC148004A

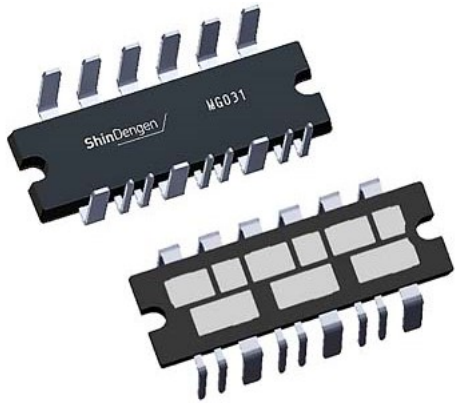
MOSFET Array

Feature

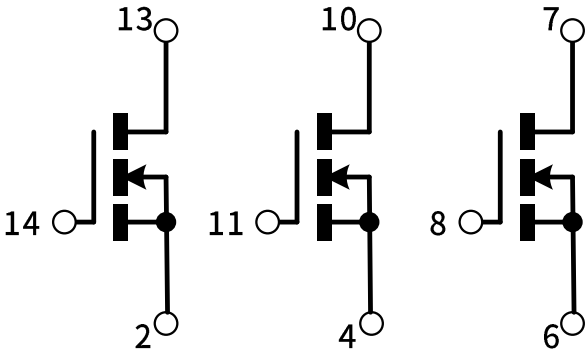
- MOSFET Array
- MOSFET(N-channel)
- High current capacity
- Low Ron
- Halogen free
- Pb free terminal
- RoHS:Yes

Outline

House Name: MG031



Equivalent circuit



Absolute maximum ratings （Tc = 25℃ unless otherwise specified ）

MOSFET

Item	Symbol	Conditions	Ratings	Unit
Channel temperature	Tch		175	℃
Drain-source voltage	V_{DSS}		40	V
Gate-source voltage	V_{GSS}		±20	V
Continuous drain current (DC)	I_D		148	A
Continuous drain current (Peak)	I_{DP}	Pulse width 10μs, Duty = 1/100	592	A
Total power dissipation	P_T		154	W
Single avalanche current	I_{AS}	Starting Tch=25℃ Tch≦150℃	51	A
Single avalanche energy	E_{AS}	Starting Tch=25℃ Tch≦150℃	289	mJ

Module

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		-55～150	℃
Mounting torque	TOR	Fixing screw M3	0.8	N・m

Electrical and thermal characteristics （Tc=25℃ unless otherwise specified.）

These are characteristics of the 1 chip unless otherwise specified.

MOSFET

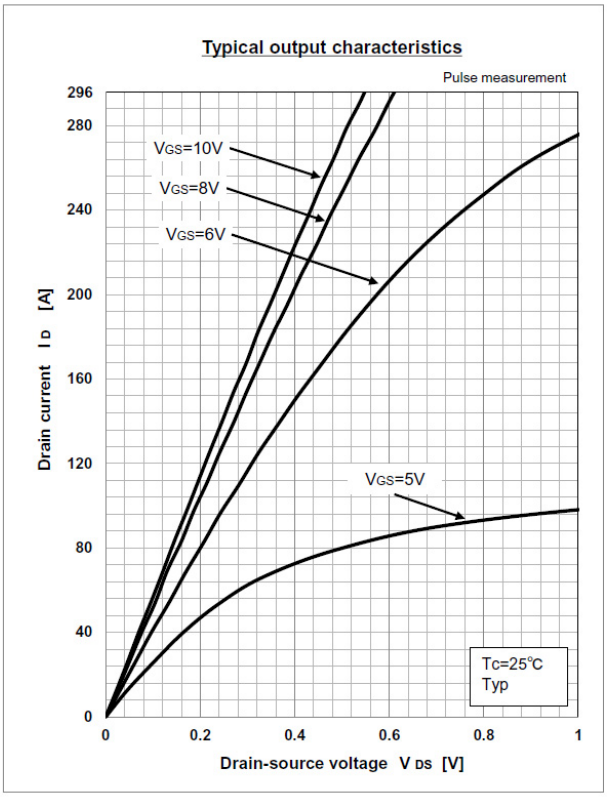
Item	Symbol	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V	40	—	—	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	—	—	1.0	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	—	—	±0.1	μA
Static drain-source on-state resistance	$R_{DS(ON)}$	Chip I_D=74A, V_{GS}=10V	—	1.25	—	mΩ
		Terminal I_D=74A, V_{GS}=10V	—	1.75	2.20	mΩ
Gate threshold voltage	V_{TH}	I_D=1mA, V_{DS}=10V	2.0	3.0	4.0	V
Source-drain diode forward voltage	V_{SD}	Is=148A, V_{GS}=0V	—	—	1.5	V
Total gate charge	Qg	V_{DD}=32V, V_{GS}=10V, I_D=148A (Electrical characteristics of discrete MOSFET device)	—	96	—	nC
Gate to source charge	Qgs		—	27	—	
Gate to drain charge	Qgd		—	33	—	
Input capacitance	Ciss	V_{DS}=25V, V_{GS}=0V, f=1MHz	—	5330	—	pF
Reverse transfer capacitance	Crss		—	390	—	
Output capacitance	Coss		—	833	—	
Turn-on delay time	td(on)	I_D=74A, V_{DD}=20V, R_G=200Ω, $V_{GS(+)}$=10V, $V_{GS(-)}$=0V, L=50μH	—	590	—	ns
Rise time	tr		—	620	—	
Turn-off delay time	td(off)		—	2310	—	
Fall time	tf		—	510	—	
Source-drain diode reverse recovery time	trr	I_F=148A, V_{GS}=0V, di/dt=100A/μs	—	26	—	ns
Source-drain diode reverse recovery charge	Qrr		—	14	—	nC

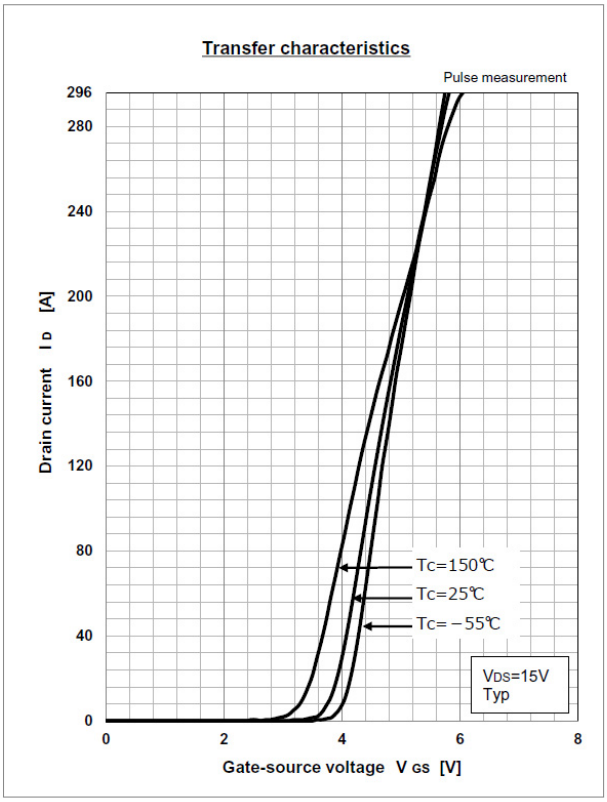
Module

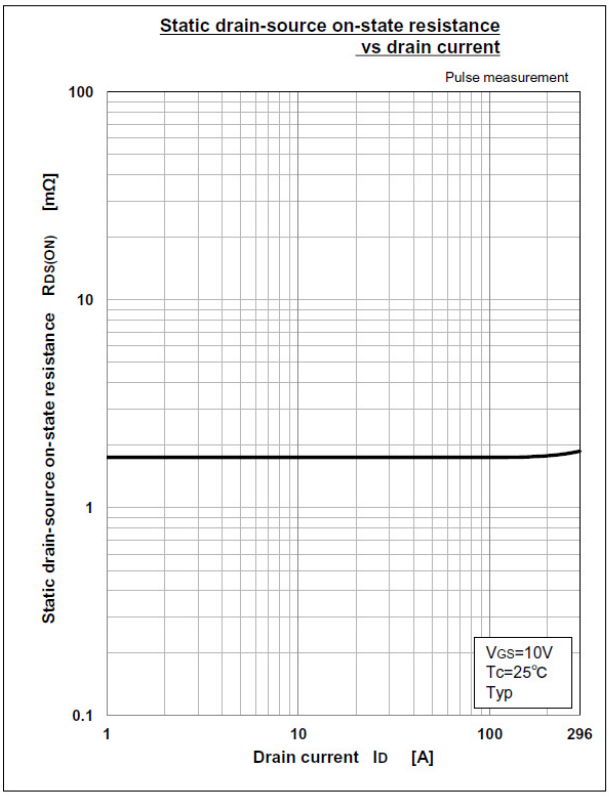
Item	Symbol	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Junction to case	—	—	0.97	℃/W
	$R_{th(j-l)}$	Junction to lead	—	—	1.41	
		Junction to lead, With insulating sheet, Thickness 0.3mm, Thermal conductivity 3.9W/mK	—	—	2.16	

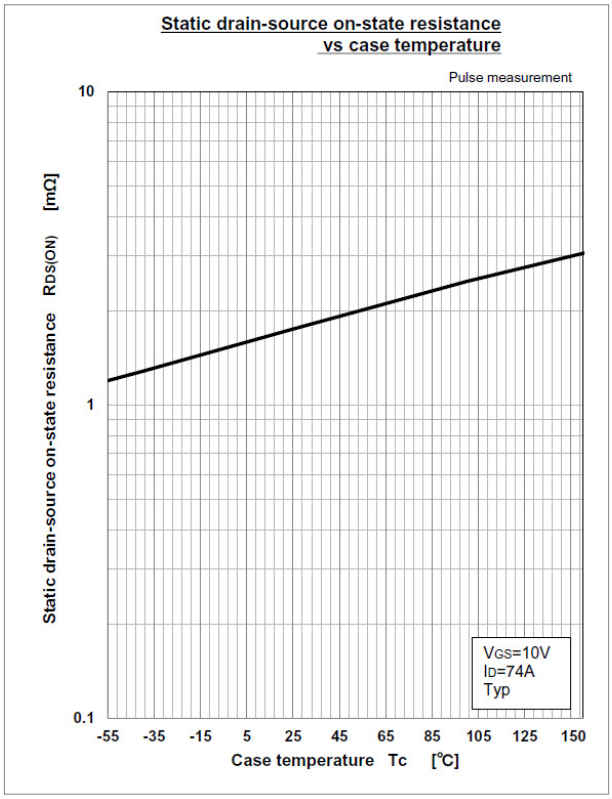
Note：Thermal resistance was measured at Q1

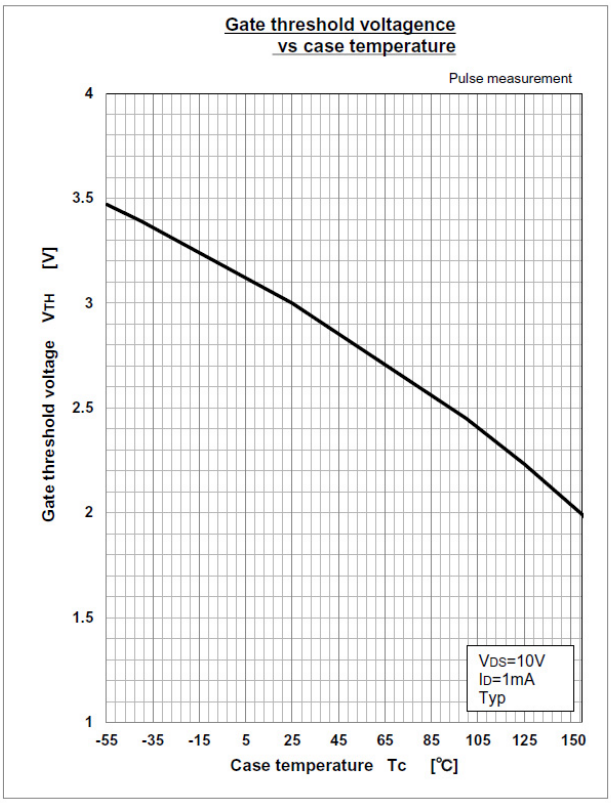
CHARACTERISTIC DIAGRAMS

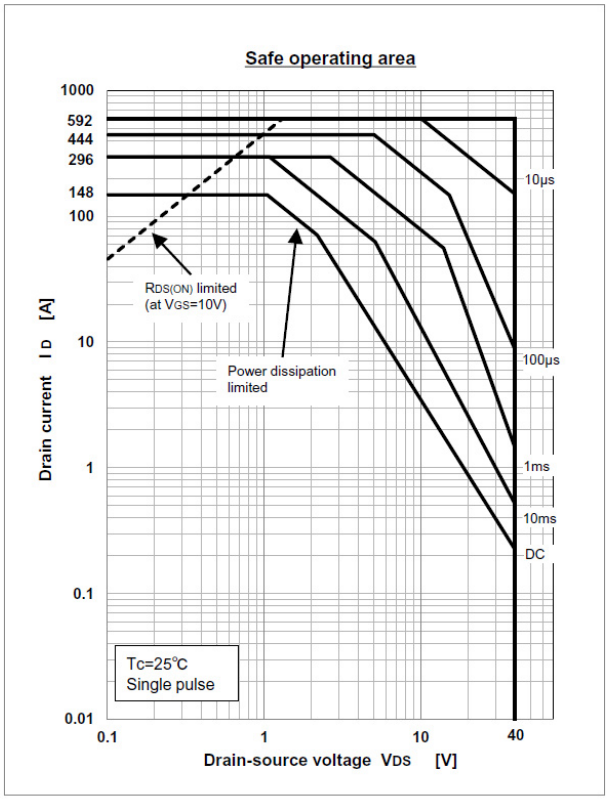


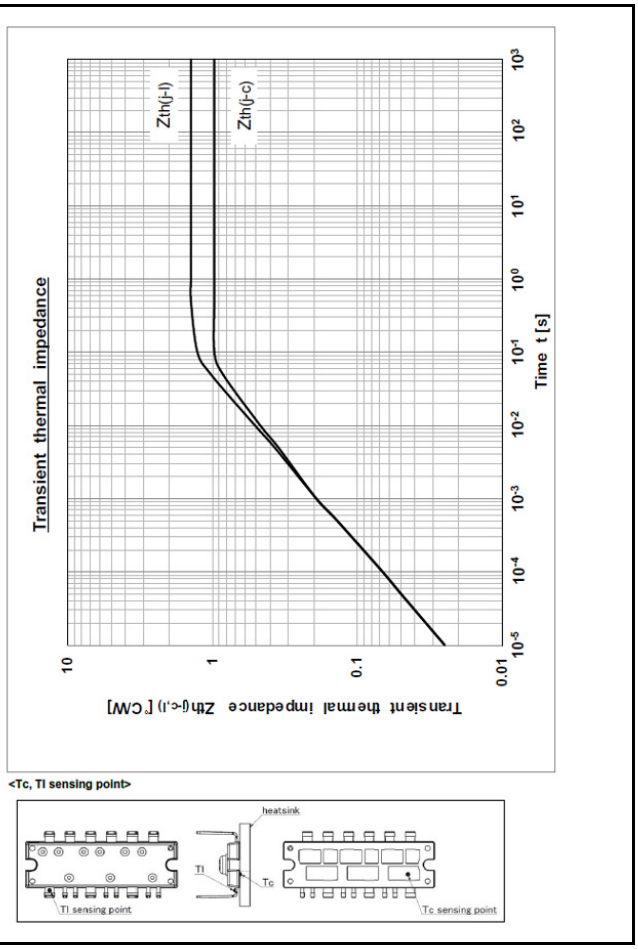


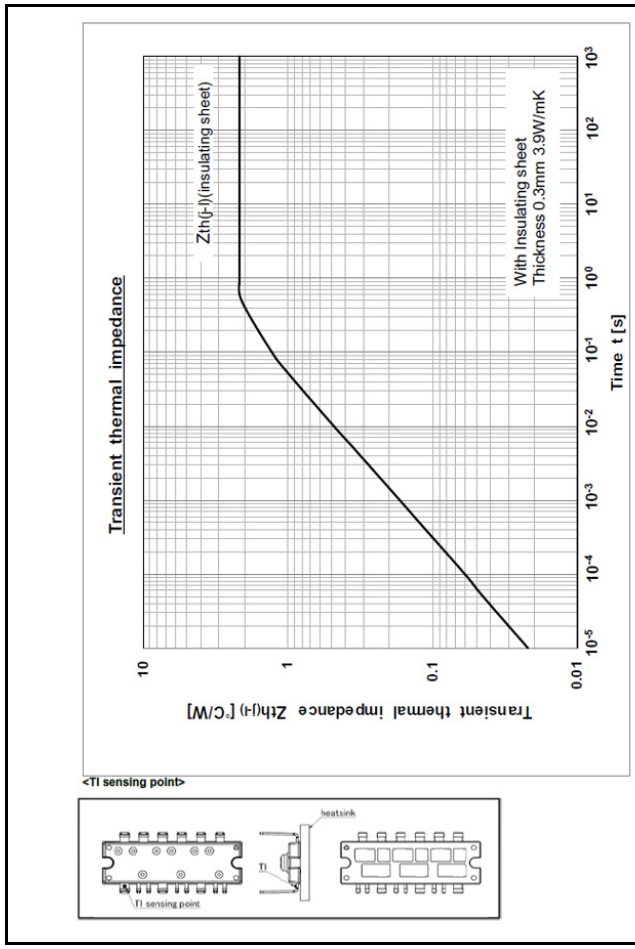




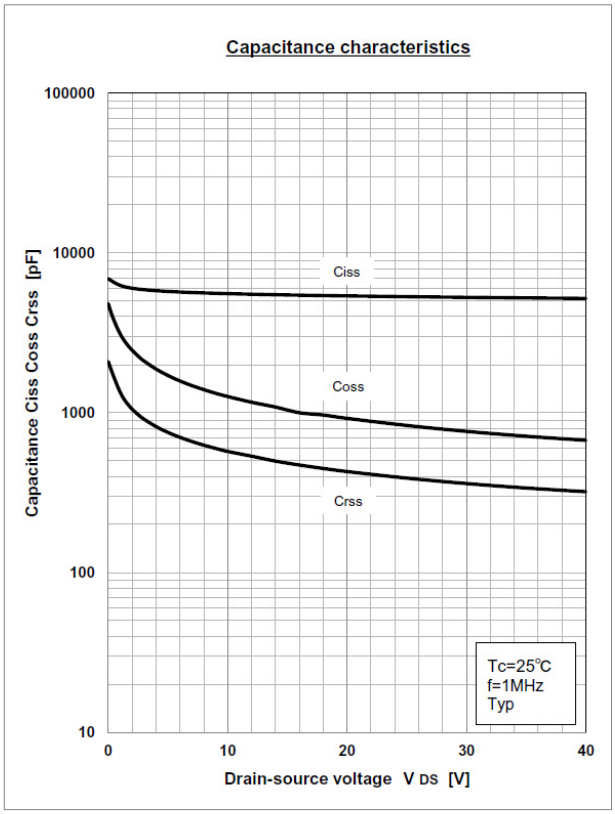

Gate threshold voltagence
vs case temperature
Pulse measurement
Gate threshold voltage VTH [V]
Case temperature Tc [℃]
VDS=10V
ID=1mA
Typ

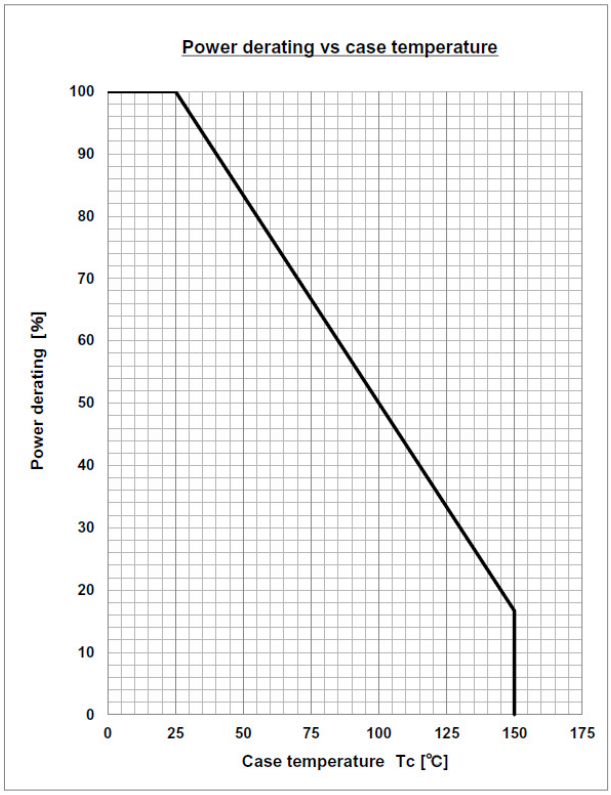

Safe operating area
Drain current ID [A]
Drain-source voltage VDS [V]
RDS(ON) limited
(at VGS=10V)
Power dissipation
limited
10μs
100μs
1ms
10ms
DC
Tc=25℃
Single pulse


Transient thermal impedance
Time t [s]
Zth(j-l)
Zth(j-c)
<Tc, Tl sensing point>
heatsink
Tl
Tc
Tl sensing point
Tc sensing point

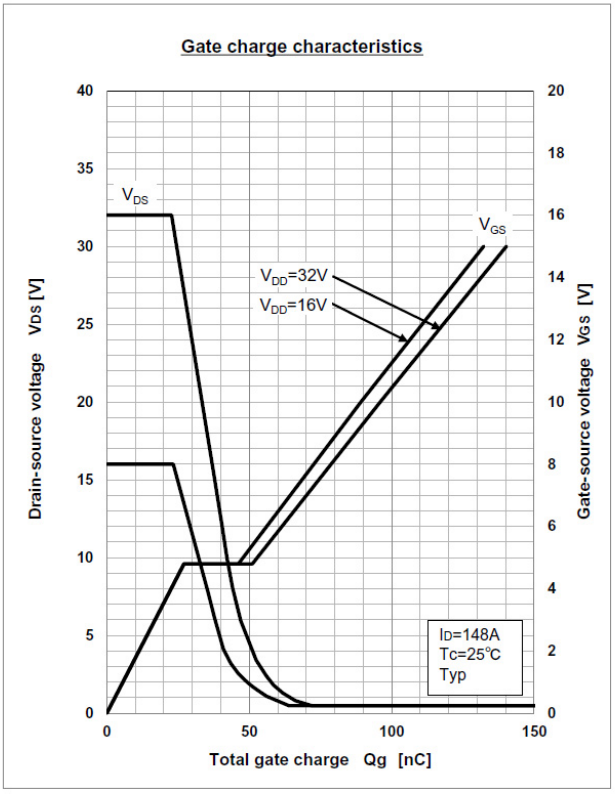

Transient thermal impedance
Time t [s]
Zth(j-l)(insulating sheet)
With Insulating sheet
Thickness 0.3mm 3.9W/mK
<Tl sensing point>
heatsink
Tl
Tl sensing point

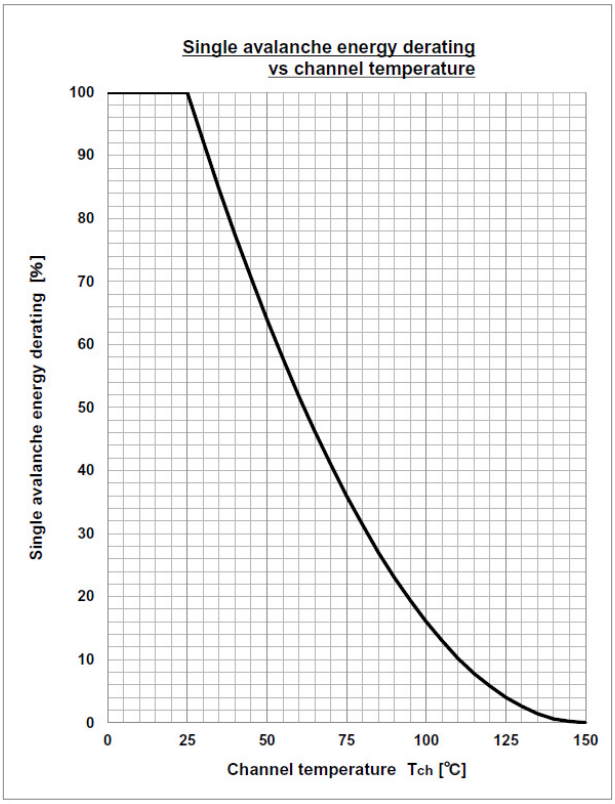
This figure shows the data of a discrete MOSFET device.





This figure shows the data of a discrete MOSFET device.



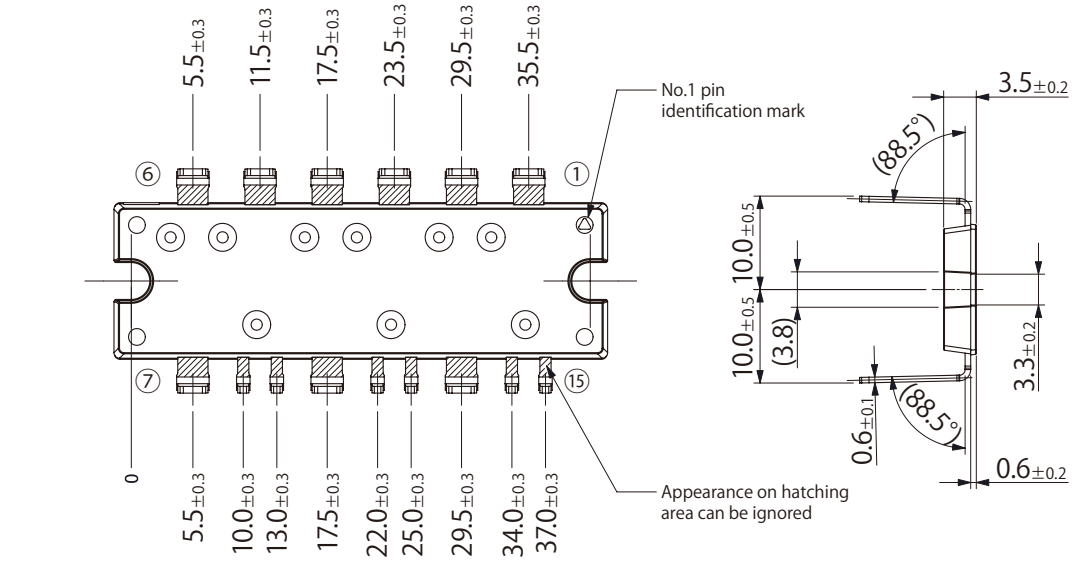


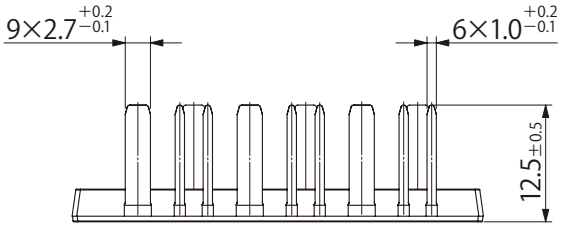
Package Outline-Dimensions

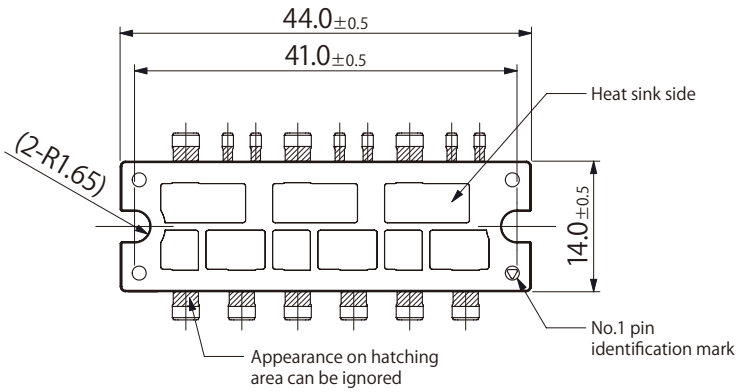
unit : mm

F5

JEDEC Code	–
JEITA Code	–
House Name	MG031







・本資料の記載内容は、改良のため予告なく変更することがあります
・ご使用にあたりましては、別途仕様書を必ずご請求下さい
・The content specified herein is subject to change for improvement without notice.
・If you wish to use any such products, please be sure to refer to the specifications.

ShinDengen

Notes

1. If you wish to use any such product, please be sure to refer to the specifications issued by Shindengen.
2. All products described or contained herein are designed with a quality level intended for use in standard applications requiring an ordinary level of reliability. If these products are to be used in equipment or devices for special or specific applications requiring an extremely high grade of quality or reliability in which failures or malfunctions of products may directly affect human life or health, a local Shindengen office must be contacted in advance to confirm that the intended use of the product is appropriate. Shindengen products are grouped into the following three applications according the quality grade.

   【Standard applications】
   Computers, office automation and other office equipment, communication terminals, test and measurement equipment, audio/visual equipment, amusement equipment, consumer electronics, machine tools, personal electronic equipment, industrial equipment, etc.
   【Special applications】
   Transportation equipment (vehicles, ships, etc.), trunk-line communication equipment, traffic signal control systems, anti-disaster/crime systems, safety equipment, medical equipment, etc.
   【Specific applications】
   Nuclear reactor control systems, aircraft, aerospace equipment, submarine repeaters, life support equipment and systems, etc.
3. Although Shindengen continuously endeavors to enhance the quality and reliability of its products, customers are advised to consider and take safety measures in their design, such as redundancy, fire containment and anti-failure, so that personal injury, fires, or societal damages can be prevented.
4. Please note that all information described or contained herein is subject to change without notice due to product upgrades and other reasons. When buying Shindengen products, please contact the Company's offices or distributors to obtain the latest information.
5. Shindengen shall not bear any responsibility with regards to damages or infringement of any third-party patent rights and other intellectual property rights incurred due to the use of information on this website.
6. The information and materials on this website neither warrant the use of Shindengen's or any third party's patent rights and other intellectual property rights, nor grant license to such rights.
7. In the event that any product described or contained herein falls under the category of strategic products controlled under the Foreign Exchange and Foreign Trade Control Law of Japan, exporting of such products shall require an export license from the Japanese government in accordance with the above law.
8. No reprinting or reproduction of the materials on this website, either in whole or in part, is permitted without proper authorization from Shindengen.